Obviously, any young woman who aspires to a career of such skill and responsibility must meet certain basic requirements and receive special training. To be commissioned in the Women's Medical Specialist Corps, a candidate must be an American citizen, physically qualified, in good health, at least twenty-one years old with no dependents or any children under eighteen years of age; and she must have a bachelor's degree in an appropriate field from an acceptable college.

If, for example, she has completed college work leading to a bachelor of science degree in home economics with a major in food and nutrition or institution management, she is ready to begin her internship as a hospital dietitian with the grade of second lieutenant. Similarly, a young woman who has completed her college studies in the biological and physical sciences and psychology is ready to begin the twelve-month course in physical therapy. Or a young woman with college credits in a wider field of studies, such as psychology, science or sociology, is ready for the eighteen-month course in occupational therapy. Those who are already professionally trained in these skills may qualify for direct Reserve commissions ranging from second lieutenant to captain. (See "Army Women on Active Duty," June 1953 DIGEST.)

Once commissioned in the Corps, an officer's chances for promotion are equal to any of her fellow officers in the Army Medical Service. She may consult her own representative in the Career Guidance Section, Personnel Division, Office of the Army Surgeon General on promotion policies as well as on chances for broadening her professional education. From time to time, selected dietitians, physical therapists and occupational therapists are sent to civilian colleges to study for the master's degree.

By their diligence, professional skill and acceptance of responsibility, members of the Women's Medical Specialist Corps have, in the past seven years, won a place of distinction beside their fellow officers of the Army Medical Service.

R 54-30

Quartermaster Center for Research and Development

Brigadier General Joseph C. Odell

THE EXPERIENCES of World War II demonstrated to the United States Army the stern fact that steaming jungle and frozen Arctic wastes could be killers as deadly as enemy planes, tanks and guns. The Quartermaster Corps, charged with the responsibility of safeguarding the personal welfare of the American fighting soldier, is today preparing to meet this challenge effectively by consolidating its research laboratories.

U. S. Army Photograph
BRIGADIER GENERAL ODELL

Creation of the Quartermaster Research and Development Center marks an important milestone in the Corps' 179-year-old history. The new $11,000,000 Center nearing completion in Natick, Massachusetts, will provide the Army with some of the best and most modern facilities in which to study scientifically under simulated conditions of weather the soldier's requirements in clothing and personal equipment for better protection against adverse environments.

The Center is located on the eastern shores of Lake Cochituate in the Town of Natick, Masachusetts, seventeen miles west of Boston. This area was chosen from three hundred and forty sites in forty states, following recommendations by a special site selection committee of scientists, educators and engineers

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appointed by the Secretary of Defense. Among the factors considered in selecting the Massachusetts site were distance from the Nation's Capital; proximity to educational institutions; topographical, regional and housing advantages; availability of water supply, power, steam and fuel.

Organizationally, the Quartermaster Research and Development Program ish under the general supervision of the Assistant Secretary of Defense for Research and Development, with specific guidance coming from the Research and Development office of the Assistant Chief of Staff, G4, which co-ordinates activities of all of the Army Technical Services in this field. Working directly with the Research and Development Command are the Advisory Committees of the National Research Council, through which many leading scientists assist on special problems.

In addition, the Command operates about one hundred and fifty contracts with colleges, universities and commercial research organizations covering many facets of the Quartermaster program. These contractors carry out specialized projects that are outside the physical capacity but within the assigned mission of the consolidated laboratories.

Operational activities at the Natick Center will be organized in six divisions, each with its own research director.

Environmental Protection Division emphasizes the study of the soldier in relation to his environment. In order to equip a soldier so that he can operate effectively in any part of the world it is necessary to have factual information, global in scope, as to the varied climates and terrains, and an estimate of their logistic importance. Such information is basic to overall Department of the Army logistical planning by the Assistant Chief of Staff, G4.

Textile, Clothing and Footwear Division is self-explanatory; however, studies of tentage also are included. Much of the work of this group is in fields in which scientific methods have only recently begun to be applied and where products available commercially are almost without exception inadequate for military purposes. Practically all of this research is of public value because of its possible application to civilian pursuits.

Mechanical Products Division concerns itself with a wide variety of mobile items, ranging from a bakery unit weighing five tons and capable of producing 16,000 pounds of fresh bread in one day (sufficient for bread rations for 32,000 troops), to

magnesium belt buckles of infinitesimal weight yet as strong as steel. Special military objectives here are simplification, standardization, decrease in weight and bulk, increase in versatility, ease of maintenance, and interchangeability of component parts of the mechanical items.

Dispensing and Handling Equipment Division develops high-speed fuel pumps, cleaning and repairing equipment for drums and cans, free-fall fuel containers for aerial delivery, forklift trucks and kindred items. Also under study are various types of mobile field testing equipment to provide rapid checking of fuels and lubricants in the field, where origin or quality may be in doubt. While strictly air items such as parachutes are developed for the Army by the Air Force, certain items used in Quartermaster aerial delivery will be perfected by this Division, such as parachute bin boxes, packing tables and drying and repair equipment.

To keep pace with the remarkable changes in the fast-growing field of plastics, a *Chemical and Plastics Division* will conduct research and development work on plastics, protective coating and finishes. Insecticides, repellents, detergents and other related items are developed in co-operation with the Office of the Surgeon General. Plastics themselves are a great challenge. As potential metal replacements, they hold forth the prospect of considerable weight saving in Army materiel. Indeed, it is impossible to foretell how radically present ideas in regard to clothing and other commonplace items may be influenced by future discoveries.

Chemicals and plastics have already progressed a long way in developing products which were only visionary a short time ago. Two examples are spot laminated nylon body armor, credited with saving many lives in Korea, and the vapor barrier "Coldbar" suit, possessing extremely high insulation qualities. The latter apparel is constructed of a vinyl plastic material resembling soft rubber and is designed to be worn under the field jacket in cold-wet climates. Field studies in United States, Canada and Korea have demonstrated its serviceability. An improved design known as the "Climastat" suit includes small holes in the material to give ventilation and rid the body of excess heat and moisture. Thus, a big step has already been taken toward the development of synthetics into wearable items having functional properties previously unattainable.

The Center's end-item development groups or "product" divisions are backed up scientifically by the *Pioneering Research Laboratory Division.* In this Division, problems of a long-range and complex scientific nature are attacked. The answers serve as the theoretical basis for the development of new items. For instance, techniques will be sought to provide the soldier with greater protection against heat; other studies will attempt to uncover the secret of killing bacterial spores by new methods; novel approaches which seek to control insect infestation by repelling rather than by killing will be tried.

An important feature of the Center will be its two complete all-weather climatic chambers for studying the relationship of man to his environment. In these chambers it will be possible to produce wide extremes of climatic conditions with temperatures ranging from minus 70° to plus 70°F. in one, and 32° to 165° F. in the other. Along with controlled solar radiation, controlled humidity and wind speed, the chambers are provided with snow- and rain-making equipment. Each will be large enough to accommodate up to twenty-five men at a time. Both can be used for studies under cold-wet conditions simulating such regions as Korea, where United States troops endured winters as severe as those encountered anywhere during World War II. Desert and jungle conditions—with controlled solar and ground radiation—also will be simulated.

Motor-driven treadmills with walking platforms are to be located at one end of the tunnel-like chambers. Air-conditioned dressing and clothing conditioning chambers nearby will be used to stabilize testing results. Special quarters consisting of an air-conditioned day room, bunk room and diet kitchen will be provided to insure environmental control among personnel participating in prolonged tests. The many variable factors in naturally occurring weather on occasion have had undesirable effects on field studies. Under simulated conditions, however, these variables are controlled to a measureable degree and their specific effects determined.

In all, ten buildings are being constructed to house the Center's research and development activities. They consist of an Administration building, complete with an auditorium, a technical library of 100,000 publications and research reports, and a cafeteria; the Climatic building where the two climatic chambers are located; a Research building and a Development

building, each with laboratories furnished with ultra modern equipment; and an Engineering building where the shops of Textile, Clothing and Footwear, Chemicals and Plastics, and Mechanical Products Divisions will be set up. A Rain Tower located here will be used to study impermeability of fabrics.

Also included in the Center will be a Hazardous Research building for evaluating fuels for internal combustion engines; a Laboratory Test building for proofing bulky experimental mechanical equipment; a barracks for military personnel participating in the studies; a boiler house and pump house; and a garage. A maximum of four hundred and twenty thousand gallons of water an hour will be pumped from nearby Lake Cochituate, most of it for use in connection with the Climatic building's refrigeration equipment.

Although the Center in Natick will be the controlling agency of all Quartermaster research and development activities, studies in rations and subsistence will continue at the Quartermaster Food and Container Institute for the Armed Forces, Chicago; the Quartermaster Research and Development Field Evaluation Agency will stay at Fort Lee, Virginia; and certain residual functions will remain in the Office of the Quartermaster General in Washington. However, the completion of the new plant will permit the discontinuance of research and development activities currently carried on at Lawrence, Massachusetts, Philadelphia, and Jeffersonville, Indiana. Consolidation at one place of these phases of a vast program will mean a saving in time, money and personnel and will insure maximum co-ordination in all aspects of studies and projects.